



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 West 15th St, Suite 3200
HELENA, MONTANA 59626

Ref: 8MO

June 16, 2009

Helena National Forest
ATTN. Dea Nelson,
2880 Skyway Drive
Helena, Montana 59602.

Re: CEQ # 20090161; EPA Comments on
Marsh Creek and Tarhead Livestock
Allotment Management Plan DEIS

Dear Ms. Nelson:

The Environmental Protection Agency (EPA) Region VIII Montana Office has reviewed the Draft Environmental Impact Statement (DEIS) for the Marsh Creek and Tarhead Livestock Allotment Management Plan Project in accordance with EPA responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA), and Section 309 of the Clean Air Act. Section 309 of the Clean Air Act directs EPA to review and comment in writing on the environmental impacts of any major Federal agency action. EPA's comments include a rating of both the environmental impact of the proposed action and the adequacy of the NEPA document.

The EPA is pleased that the Lincoln Ranger District of the Helena National Forest is proposing to improve grazing practices on the Marsh Creek and Tarhead grazing allotments to address grazing effects on riparian areas and to better control livestock movement within the allotments. Grazing can adversely impact streams and riparian areas by changing, reducing, or eliminating riparian vegetation leading to stream channel widening and aggradation or lowering of the water table, destabilized stream banks, loss of aquatic habitat, and adverse effects on fisheries and water quality (sediment, nutrients, fecal coliform, temperature effects, etc.). We support improvements in grazing systems and practices with use of increased monitoring and adaptive management, and enhancing herding, off-stream watering, salting, fencing and other range improvements or practices.

We have some concern, however, that DEIS Table 2.7 comparing alternatives shows that Alternative 2 would increase grazing capacity (AUMs) on both allotments in comparison to existing conditions (i.e., increase Marsh Creek allotment from 201 to 269 AUMs, and increase Tarhead allotment from 207 AUMs to 277 AUMs); and also shows that the duration of grazing would not change (remain from July 1 to September 30 on Marsh Creek Allotment; and remain from June 16 to September 30 on Tarhead Allotment). This raises concern about the extent of water quality, riparian and hydrologic condition and fisheries improvements that may result from updated AMPs (i.e., if increased grazing capacity and no change in duration of grazing occurs,

will there be meaningful and/or timely improvements in degraded riparian areas?).

It is stated that the Marsh Creek Allotment includes 67 acres of riparian habitat and three streams and several small springs, with one riparian area heavily used; and the Tarhead Allotment includes 49 acres of riparian habitat with four streams and small springs, and that the upper end of Tarhead Creek and portions of Trout Creek and Weino Creek have high livestock use. Streambank damage and bank trampling have occurred in some areas, and portions of some streams have been assessed as being non-functional or functioning-at-risk.

We understand that 269 AUMs grazing capacity on the Marsh Creek Allotment and 276 AUMs for the Tarhead Allotment were the authorized grazing levels from 1961 to 2006. We also understand that during this period most streams had elevated sediment levels and riparian impacts. We ask if it is prudent to allow the same level of grazing that had been associated with past elevated sediment levels and riparian impacts? It would appear that reverting to grazing levels and durations of grazing that had been associated with past elevated sediment levels and riparian impacts may not achieve timely riparian restoration and improvement in stream conditions.

While we support improved monitoring and use of adaptive management, and development of standards for bank trampling, forage utilization, stubble height, & woody browse use for livestock management, it would appear that reductions in the intensity of grazing (number of animals) and the duration of grazing periods would achieve more timely recovery of riparian/stream conditions. Will the proposed levels of grazing intensity and duration of grazing allow the non-functioning and functioning-at-risk streams to be adequately improved to achieve properly functioning condition?

We recommend that additional explanation be provided in the FEIS to more clearly describe how stream bank trampling and disturbances will be reduced and riparian conditions and water quality will improve with increased grazing capacity (AUMs), and little change in duration of grazing season. We encourage consideration of grazing management changes that result in timely and meaningful improvements in riparian conditions, water quality and fish habitat. We recommend that functioning-at-risk and non-functioning streams caused by grazing should be put on a positive trend by 2015, and a goal should be established to achieve properly functioning conditions by 2025.

It is also important that updated Allotment Management Plans (AMPs) be consistent with the Forest Service's responsibility for assuring that activities on National Forest land are consistent with the Clean Water Act goal to restore and maintain the chemical, physical and biological integrity of the Nation's waters. The Helena NF and livestock permittees should work with the Montana DEQ to assure that grazing management in watershed of impaired streams (e.g., Little Prickly Pear Creek) is consistent with the States development of Total Maximum Daily Loads (TMDLs) for impaired waters (contact Dean Yashan of MDEQ in Helena at 444-5317).

We also recommend disclosure of more specific information on frequency, duration and timing of monitoring; who is responsible for monitoring; and how monitoring data would be analyzed and interpreted. Monitoring methods to be used for assessing recovery of degraded streams and riparian areas, and assessing future trends in stream conditions should also be more fully disclosed.

In addition we are concerned about the adequacy of budgets and funding to carry out monitoring and make timely adjustments in livestock management. Will the necessary funding and resources be available to implement monitoring needed to livestock management as well as monitoring to assess riparian and stream recovery? Will there be adequate funding to develop range improvements that may be needed such as off-stream water sources, herding, salting, and fencing?

The EPA's further discussion and more detailed questions, comments, and concerns regarding the analysis, documentation, or potential environmental impacts of the Marsh Creek and Tarhead Livestock Allotment Management Plan DEIS are included in the enclosure with this letter. Based on the procedures EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action and alternatives in an EIS, the DEIS has been rated as Category EC-2 (Environmental Concerns-Insufficient Information).

As can be seen from the enclosed comments, the EPA is supportive of monitoring and adaptive management and grazing improvements, but believes additional information should be provided regarding adequacy of proposed grazing modifications to achieve timely and meaningful improvements in riparian and stream conditions. The EPA also has concerns regarding the availability of adequate funds and resources to implement proposed monitoring and adaptive management and needed range improvements. The EPA believes additional information is needed to fully assess and mitigate all potential impacts of the management actions.

The EPA appreciates the opportunity to review and comment on the DEIS, and the opportunity to review the proposed project in the field. If we may provide further explanation of our comments please contact Mr. Steve Potts of my staff in Helena at 406-457-5022 or in Missoula at 406-329-3313 or via e-mail at potts.stephen@epa.gov . Thank you for your consideration.

Sincerely,

John F. Wardell
Director
Montana Office

Enclosures

cc: Larry Svoboda/Connie Collins, EPA 8EPR-N, Denver
Mark Kelley/Robert Ray, MDEQ, Helena

EPA COMMENTS ON MARSH CREEK AND TARHEAD ALLOTMENT MANAGEMENT PLAN UPDATE DRAFT EIS

Brief Project Overview:

The Helena National Forest proposes to reauthorize livestock grazing on the Marsh Creek and Tarhead allotments, on the Lincoln Ranger District, under 10-year permits. The purpose and need is to reduce riparian disturbance, improve stream bank stability, and increase riparian vegetation abundance and diversity to maintain, or move toward, desired condition. Each permit would incorporate a new allotment management plan (AMP), developed to improve range conditions, particularly in riparian areas. The new AMPs would also provide opportunities to adapt management as needed, based upon monitoring of both riparian and upland sites.

The Marsh Creek Allotment includes approximately 3,380 acres of National Forest System (NFS) land, divided into 2 pastures, and is located just east of the Continental Divide, southeast of Granite Butte, including the upper reaches of Marsh Creek and the North Fork of Marsh Creek. The Forest Service currently permits the permit holder (permittee) to graze 51 cow/calf pair, or 201 Animal Unit Months (AUMs), under a deferred grazing system within a season of July 1 through September 30. The allotment area consists mostly of timber (Douglas fir and lodgepole pine), mixed with open bunchgrass parks on south aspects.

The Tarhead Allotment includes approximately 4,675 NFS acres, divided into 3 pastures, and is located on the east side of the Continental Divide, south of Flesher Pass, including the uppermost reaches of 4 small streams: Trout, Tarhead, Specimen and Weino Creeks. The permittee is currently permitted to graze 45 cow/calf pair (207 AUMs) under a deferred system with a season of use from June 16 to September 30. Like the Marsh Creek allotment, Tarhead is dominated by timber on north aspects, and open bunchgrass parks on south aspects.

The DEIS analyzes two alternatives, No Action or Alternative 1, and the Proposed Action or Alternative 2. Under Alternative 1 as defined by agency policy (FHS 1909.15, 14.2), no grazing would be allowed, and term grazing permits would not be reissued. Allotments would be considered for permanent closure. Existing range improvements such as drift fences and water developments would be removed. Boundary fences are private and would remain. No allotment-specific range monitoring would occur.

Alternative 2, the proposed action and preferred alternative, includes reauthorizing grazing of livestock on the Marsh Creek and Tarhead allotments under 10-year permits incorporating a new AMP and using an adaptive management strategy to protect localized areas of riparian impacts, and to better facilitate livestock movement between pastures. This proposal establishes an initial stocking rate for each allotment, and establishes a maximum permitted stocking rate or "cap" for the allotment for the term of the permit. Grazing would continue under a 2-pasture (Marsh Creek) or 3-pasture (Tarhead) deferred rotation as long as current utilization standards continue to be met. The overall authorized season of use would remain the same: July 1 to September 30 for Marsh and June 16 to September 30 for Tarhead. The actual "turn out" date for livestock, at

the beginning of the season, would continue to be based on range readiness – when winter snowmelt had ended, soil is no longer saturated, and key forage species are approximately 8 inches high.

An adaptive management strategy outlines steps (i.e. a sequence of management adjustments) to be implemented if identified monitoring “triggers” are reached. Monitoring sites would be established at key areas within riparian areas, where both short- and long-term monitoring would be performed, and monitoring results would be used to adjust management to ensure that conditions are moving toward desired. Stocking rates could be adjusted up or down based on monitoring results, but would not exceed levels authorized in the 1961 Allotment Management Plan: 269 AUMs for Marsh Creek Allotment, 277 AUMs for Tarhead Allotment. Experience over the past 45 years indicate that these levels provide a reasonable upper limit for stocking rates for purposes of this analysis. Grazing would continue at the current level (201 AUMs for Marsh and 207 AUMs for Tarhead, approximately 3/4 of the maximum level; until annual monitoring indicates a need for adjustment to accelerate improvement. Or, if objectives for vegetative conditions are met, upward adjustments in stocking would be considered if long-term monitoring indicates those conditions and trends can be maintained.

Livestock distribution would be managed adaptively by improving salt placement and/or applying herding techniques. A grazing frequency would be maintained that, on average, over time allows plants full growth prior to grazing or regrowth following the grazing season (i.e., ed through adjusting or changing the grazing system, adjusting grazing duration, and adjusting timing to meet the criteria in proceeding grazing seasons). The riparian allowable use trigger standards for stubble height and bank alteration would be met using adaptive management options, including adjusting grazing duration, adjusting timing, applying herding 2-3 times per week, and adjusting or changing grazing systems. Adaptive management options would include salt placement, herding, electric fence, and adjusting duration or adjusting timing. Additionally, the following design criteria in place in the current permit, would be continued under the new permit:

- Use salting and herding to influence livestock distribution. Do not salt within 1/4 mile of water sources, heritage sites, or developed recreation.
- Maintain existing range improvements as assigned in the term permit.
- Reconstruct/replace existing improvements as their useful life expectancy is diminished.
- Evaluate range readiness annually and defer turn-on dates as appropriate.
- Evaluate short-term monitoring to adjust pasture move dates and move dates off the allotment.
- Implement Best Management Practices (BMPs) for riparian areas, plantations, heritage, and weeds.

Comments:

1. The EPA is pleased that the Lincoln Ranger District of the Helena National Forest is proposing to improve grazing practices on the Marsh Creek and Tarhead grazing allotments to address grazing effects on riparian areas and to better control livestock movement within the allotments. We support improvements in grazing practices, since grazing can adversely impact streams and riparian areas by changing, reducing, or eliminating riparian vegetation leading to stream channel widening and aggradation or lowering of the water table, destabilized stream banks, loss of aquatic habitat, and adverse effects on fisheries and water quality (sediment, nutrients, fecal coliform, temperature effects, etc.).

We appreciate the inclusion of informative maps showing allotment areas in Chapters 1 and 2, as well as Tables 2.1 through 2.8 providing livestock and allotment management and monitoring information and comparison of alternatives. Although we do suggest that the "key site" on Marsh Creek for the Marsh Creek Allotment, and "key sites" on Trout and Weino Creeks for the Tarhead Allotment to be monitored for riparian impacts be identified on maps (pages 16).

2. It is stated that the Marsh Creek Allotment includes 67 acres of riparian habitat and three streams and several small springs, with only one riparian area heavily used (page 23); and the Tarhead Allotment includes 49 acres of riparian habitat with four streams and small springs, and that the upper end of Tarhead Creek and portions of Trout Creek and Weino Creek have high livestock use (page 25). We would expect that development of updated Allotment Management Plans (AMPs) for the Marsh Creek and Tarhead grazing allotments would generally reduce grazing impacts on riparian areas and improve water quality, hydrologic conditions and fisheries. Table 2.7 comparing alternatives, however, appears to show that Alternative 2 would increase grazing capacity (AUMs) on both allotments in comparison to existing conditions (i.e., increase Marsh Creek allotment from 201 to 269 AUMs, and increase Tarhead allotment from 207 AUMs to 277 AUMs); and also shows that the duration of grazing would not change (remain from July 1 to September 30 on Marsh Creek Allotment and from June 16 to September 30 on Tarhead Allotment).

This raises some concern regarding the extent of water quality, riparian and hydrologic condition and fisheries improvements that may result from updated AMPs if increased grazing capacity results, and no change in duration of grazing occurs. The DEIS indicates that bank alteration in some areas along Marsh Creek are 30 to 45%, with 85 to 90% bank damage on portions of Weino Creek, and 35-50% bank damage on Specimen Creek (page 42). In addition, there are other statements in the DEIS that indicate grazing impacts on streams, riparian areas and fish habitat.

"it is unlikely that there will be a noticeable reduction in bank disturbance in other areas where bank alteration from livestock grazing has occurred" (page 38).

"With regard to Specimen and Weino Creeks, it is likely that the improvement in habitat condition related to the healing of streambanks that has occurred during the various years of non-use will no longer continue now that Weino Creek and Specimen will be grazed again each year. Grazing on these two streams will be at a higher numbers as compared to pre-2006, but as with the other pastures in the Tarhead allotment grazing will occur for a shorter time period due to the deferred rotation schedule" (page 39).

"A high level of bank disturbance due to trampling by livestock and wildlife was observed on the North Fork of Marsh Creek" (page 43).

"Conditions along Trout Creek and a tributary of Trout Creek were rated as non-functioning. Sparse riparian-wetland vegetation dominated by grasses, trampling above banks and large areas of unvegetated banks were cited as reasons for this rating" (page 44).

While we support the proposed monitoring of stream bank disturbance, forage utilization standards, stubble height, and woody browse use, and changing management based on monitoring results, it is not clear to us if the high use area on the Marsh Creek Allotment and high use areas on Tarhead Creek, Trout Creek and Weino Creek on the Tarhead Allotment will realize improvements in riparian condition if the intensity of grazing increases (i.e., increase number of animals/AUM) and the duration of grazing remains the same.

We understand that 269 AUMs grazing capacity on the Marsh Creek Allotment and 276 AUMs for the Tarhead Allotment were the authorized grazing levels from 1961 to 2006. We also understand that during this period most streams had elevated sediment levels and riparian impacts (pages 46). Allowing the level of grazing that was associated with elevated sediment levels and riparian impacts in the past does not appear to be the most prudent way to achieve timely riparian restoration and water quality improvement. Will proposed grazing system changes allow functioning-at-risk and non-functioning streams to be improved to properly functioning condition?

We support use of monitoring and adaptive management, and use of other improvements such as herding, salting, off-stream water developments and fencing, but additional explanation is needed to more clearly describe how stream bank disturbances will be reduced and riparian conditions and water quality will improve with increased grazing capacity (AUMs), and little change in duration of grazing season.

We believe the goals of grazing improvements should be to convert functioning-at-risk and non-functioning streams to properly functioning condition. We recommend that functioning-at-risk and non-functioning streams caused by grazing should be put on a positive trend by 2015, and a goal should be established to achieve properly functioning conditions by 2025.

3. EPA considers the protection, improvement, and restoration of wetlands to be a high priority. Wetlands increase landscape and species diversity, and are critical to the protection of designated water uses. Wetlands have experienced severe cumulative losses nationally. Potential impacts on wetlands include: water quality, habitat for aquatic and terrestrial life, flood storage, ground water recharge and discharge, sources of primary production, and recreation and aesthetics. Executive Order 11990 requires that all Federal Agencies protect wetlands. In addition national wetlands policy has established an interim goal of **No Overall Net Loss of the Nation's remaining wetlands**, and a long-term goal of increasing quantity and quality of the Nation's wetlands resource base. Wetland impacts should be avoided, and then minimized, to the maximum extent practicable, and then unavoidable impacts should be compensated for through wetland restoration, creation, or enhancement.

Riparian habitats, similar to wetlands, are also important ecological areas. Riparian areas support many species of western wildlife, and increasing landscape and species diversity. EPA also considers the protection, improvement, and restoration of riparian areas to be a high priority.

Riparian-wetlands conditions are discussed in the Hydrology section of Chapter 3 (pages 43 and 44), where it is stated for the Marsh Creek Allotment that,

-Marsh Creek bank disturbance was concentrated in areas of easy access to the stream, such as dispersed recreation areas.

-One unprotected spring near the confluence of an unnamed tributary and Marsh Creek was observed to be impacted by trampling in 2008.

-North Fork of Marsh Creek was more impacted than Marsh Creek. A high level of bank disturbance due to trampling by both livestock and wildlife was observed on the North Fork, both on National Forest and private land.

-Trampling was observed in several areas of spring development along the stream in 2008. The riparian area upstream of these springs was observed to be heavily browsed, up to a wet area with intermittent standing water, which was relatively intact.

-Lack of good watering sources at higher elevation has been cited as a reason for poor distribution over the Marsh Creek Allotment, potentially contributing to areas of high impact where water is accessible.

For the Tarhead Allotment it was stated that,

-Conditions along Trout Creek (T13N R6W Sections 5/6 and T14N R6W Section 31)

and a tributary to Trout Creek (T13N R6W Section 5) were rated Non-Functional. Sparse riparian-wetland vegetation dominated by grasses, trampling above banks, and large areas of unvegetated banks were cited as reasons for this rating. This indication of livestock impacts is consistent with the finding of about 29% bank alteration in a tributary to Trout Creek.

-While no formal evaluation was completed, Tarhead Creek was observed to be heavily trampled during a field review in May 2007.

- A portion of Weino Creek (T14N R6W Section 21a) was rated Functional—At Risk (FAR) with an upward trend. Documented reasons for this rating include lack of riparian vegetation on outer edges of the floodplain, insufficient vegetation density to protect banks well, and lack of large rocks and overflow channels.

There appears to be a need to redistribute livestock use out of riparian areas and/or to remove livestock from riparian areas reduce bank trampling and to promote recovery of riparian vegetation. As noted earlier, we are concerned that proposed grazing improvements may not result in meaningful or rapid improvements in riparian conditions, water quality and fish habitat.

4. Streams on the Marsh Creek allotment are stated to drain to Little Prickly Pear Creek, and portions of the streams on the Tarhead Allotment drain to Virginia Creek. Both of these streams are on Montana's Clean Water Act Section 303(d) list of impaired waters (i.e., Little Prickly Pear Creek, MT 41I005-051, 20 mile segment, North and South Forks to Clark Creek, impaired with only partial support of aquatic life and cold water fishery uses due to alteration in stream-side or littoral vegetative covers sedimentation/siltation, physical substrate habitat alterations, temperature from agriculture, grazing in riparian or shoreline zones, loss of riparian habitat, flow alterations from water diversions, forest roads, silviculture activities; and MT 41I005-052, 16.1 mile segment Clark Creek to the Missouri River, impaired with no support of aquatic life and cold water fishery uses due to Alteration in stream-side or littoral vegetative covers, other flow regime alterations, physical substrate habitat alterations, and temperature, from channelization, highways, roads, bridges, infrastructure, loss of riparian habitat, flow alterations from water diversions). Virginia Creek (MT41I005_040, 8.2 miles from headwaters to Canyon Creek), is impaired with only partial support of aquatic life and cold water fishery uses and no support of drinking water uses, due to copper, lead and zinc from abandoned mine lands.

Grazing, therefore, only appears to contribute to impairments of Little Prickly Pear Creek. Abandoned mining operations appear to be the major source of water quality impairment in Virginia Creek. Although monitoring for fine sediment appears to show levels of fine sediment greater than 30%, which can cause adverse impacts to fisheries, on Marsh Creek, Trout Creek and Weino Creek. Sediment sources are likely to result from roads and other sources in addition to grazing. TMDLs and Water Quality Plans have not yet been

developed by the Montana DEQ to promote restoration of water quality in Little Prickly Pear Creek and Virginia Creek. It will be important for the Helena NF and livestock permittees to work with the Montana DEQ to assure that grazing management in watershed of impaired streams is consistent with TMDL development (contact Dean Yashan of MDEQ in Helena at 444-5317).

5. It is noted that a stock driveway is proposed for construction on the Marsh Creek Allotment, which will involve removing trees along a 10 to 15 foot wide path, 1/8 to 1/4 mile long (page 45). The gradient of the stock driveway would be 10 to 12%. We encourage the Forest Service and the permittee to use BMPs to reduce erosion and sediment transport from the stock driveway to surface waters (e.g., waterbars, slash and/or vegetative filter windrows, erosion mats, etc.).
6. The EPA believes that monitoring is a necessary and crucial element in identifying and understanding the consequences of one's actions, and should be an integral part of any management decision. We generally consider there to be three purposes for monitoring of range management: 1) determining annual management actions to be taken, such as movement of animals within or between pastures; 2) determining the overall trend of the range, water, and related conditions over time; and 3) validating predictions made during the analysis process and documenting improvements (e.g., documenting recovery of degraded streams). Identification of benchmark conditions to be monitored over the long-term to determine relative progress toward a desired condition, and when conditions or triggers are reached that might lead to a change in grazing management are particularly important.

We appreciate the discussion of monitoring and adaptive management on pages 17 and 18, although it would be helpful to more clearly describe the riparian condition indicators that would be monitored and the trigger levels for these indicators that would be used to move livestock based on monitoring at these key sites. It is our understanding that stubble height, browse use on sedges and woody shrubs, and stream bank disturbance would be monitored to evaluate riparian condition, and that trigger levels of greater than 30-40%, 3-4 inch stubble height on herbaceous materials, 30-40%, 6 inch stubble height on sedges, 40%, woody browse, and 15-20% stream bank disturbance would be used to trigger livestock movement (Table 2.5, pages 18). It is not clear, however, if one or all of these trigger levels need to be attained to trigger livestock movement. We recommend that more detailed descriptions or explanations be provided regarding the potential riparian indicator monitoring scenarios that would trigger livestock movement. For example, if 15-20% stream bank disturbance was attained, but the 30-40% forage use standards were not attained would livestock be moved?

It would also be helpful if more specific information on frequency, duration and timing of monitoring; who is responsible for monitoring; and how the data would be analyzed and interpreted were provided.

Also monitoring methods to be used for assessing recovery of degraded streams and riparian areas, and assessing future trends in stream conditions should also be more fully disclosed. What is the schedule for continuing PFC assessments of streams in the grazing allotments? Can monitoring of fish spawning success in streams flowing through grazing allotments be carried out?

We also draw your attention to the documents, *"Monitoring Protocols To Evaluate Water Quality Effects of Grazing Management On Western Rangeland Streams,"*; *"Monitoring for Success: Ranch Planning, Upland Monitoring, Stream Channel and Riparian Area Monitoring"*; and two brochures, *"Riparian Grazing Successes on Montana Ranches"*, and *"Managing Change: Livestock Grazing On Western Riparian Areas."* These references may be helpful in refining the monitoring program and in obtaining additional cooperation and understanding from grazing permittees in carrying out grazing management and monitoring activities. Contact the Montana DEQ if you need to obtain copies of these documents (contact Kristy Zhinin, Nonpoint Source Information & Education Coordinator at MDEQ at 444-7425).

7. We are also concerned whether adequate budgets and funding will be available to carry out monitoring and make timely adjustments. Will the necessary funding and resources be available to implement this monitoring program, as well as develop range improvements that may be needed such as off-stream water sources and fencing?
8. Thank you for discussing noxious weeds and invasive plants present in the project area, and likely effects of grazing on weed spread (pages 71, 72). Noxious weeds are a great threat to biodiversity, and can out-compete native plants and produce a monoculture that has little or no plant species diversity or benefit to wildlife. We fully support efforts to control and reduce weed threats, although we encourage prioritization of management techniques that focus on non-chemical weed control first, with reliance on chemicals being the last resort, since weed control chemicals can be toxic and have the potential to be transported to surface or ground water following application.

Weed prevention is often the most cost-effective way to manage and control weeds by avoiding new infestations and spread of weeds, and thus, avoiding the need for many herbicide weed treatments (e.g., revegetation of disturbed areas, use of weed free seed, cleaning vehicles and equipment, and other practices that prevent infestation and spread of weeds). Early recognition and control of new infestations avoids wider future use of herbicides and other control methods. We also suggest that you consider the use of biological control if insects or other biocontrol methods are available for their control in areas that would be sensitive to herbicide use.